



MAGAZINE

PRICE TWOPENCE

MARCH 1959



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FRONT COVER: *Trafalgar Square*,
by M. J. Deacon (Head Office)

OUR CONTRIBUTORS



Dennis Carey is a member of European Department at Head Office and at one time worked as a journalist for *Reuter's*. He joined the Company in October 1956.



Alan J. Halfpenny works in Transport Department at Wilton. He joined the Company in 1957 after graduating in geology and geography at the University College of North Staffordshire.



James Thurlby, Acting I.C.I. Press Officer, has been with I.C.I. for a little over four years. Before joining the Company he was in journalism with Yorkshire newspapers and for six years with the "*Irish Times*" in Dublin, where he also studied philosophy at Trinity College.

Maintenance for £100,000,000

By Dennis Carey

This month Wilton Works is expected to pass the figure of £100,000,000 spent on one site. To see that this huge investment ticks over without breakdown is the job of the works engineers, assisted by one of the largest and best equipped workshops in the country.

Colour photographs by Harold Scott

STANDING among the busy lathes in the new Machine and Fitting Shop of Wilton's Engineering Works, I realised what a long way we have come from the village smithy of 150 years ago. An old style blacksmith of the last century would have been amazed if by some means he could have been with me on my recent visit to this vital section of the Wilton Works: and he would have been hard put to it to see any similarity to his own smoky, dirty metalworking forge.

All around me were gently humming machines, operated by electricity and tended by workers in white overalls. Everything was efficient, purposeful, calm. Even in the older adjacent fabricating shops, where the heavier types of maintenance and repair are carried out in an atmosphere of clanging metal and the bright flash of electric welding, it is a far cry from the cramped, untidy old workshops of our great-grandfathers. Yet these modern maintenance shops are performing precisely the same function of repairing, jobbing and fabricating that was the stock in trade of the old smiths.

The workshops are not only situated at the heart of the Wilton site, but they have also been playing a vital and central part in the development of the whole Wilton plan. In 1946, when I.C.I. plant first began to go up in the fields of this former Yorkshire country estate, the original Engineering Maintenance Workshops was one of the first portions of the plant in operation. Right from the start the workshops played a dual role in this I.C.I. development. They

have produced components for the actual construction of new plant, and at the same time they have done every type of maintenance on plant once it has come into operation—from renewing intricate pieces of machinery in the 'Terylene' works to straightening lorry bumpers and mending canteen tables.

Gradually maintenance has come to play an ever more important part, and it now comprises over 80% of the work done on the Workshop floors. With five I.C.I. Divisions to be served at Wilton, as well as the central services such as the power station and the pipelines, the workshops have more than enough

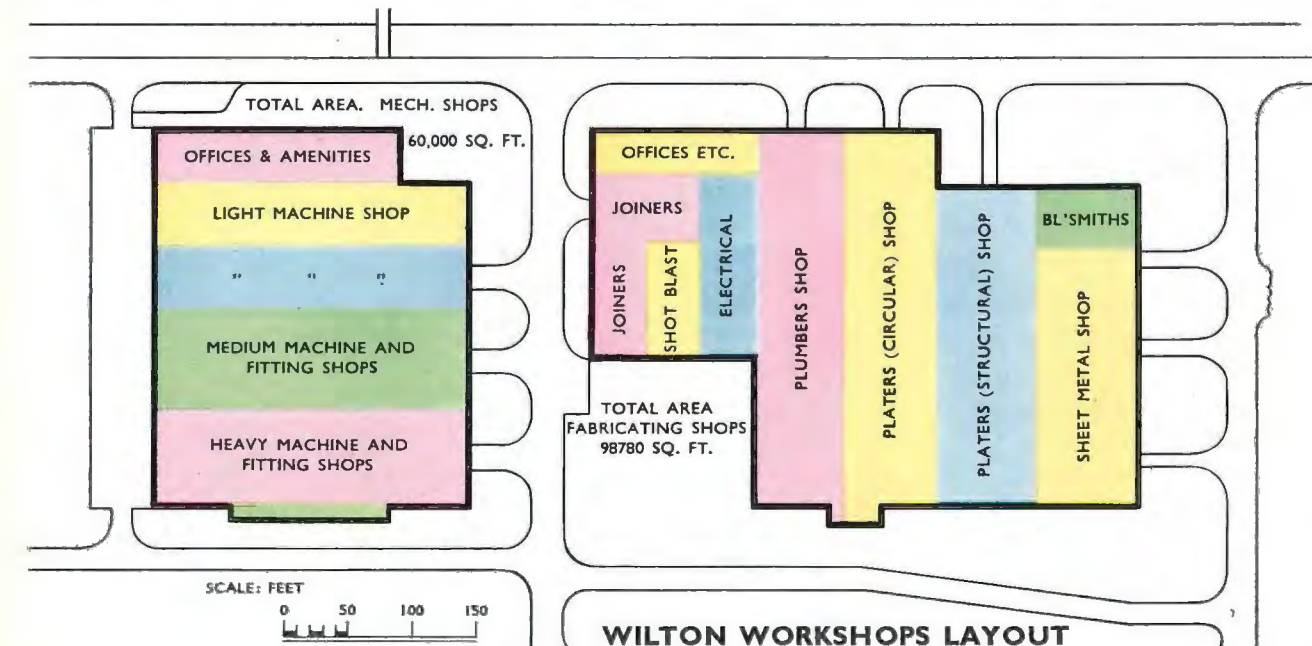
customers to justify their existence as a separate unit on the site. They operate in fact as a complete engineering unit within the framework of the Wilton organisation, with their own administration, and of course their own loyalties, successes and traditions.

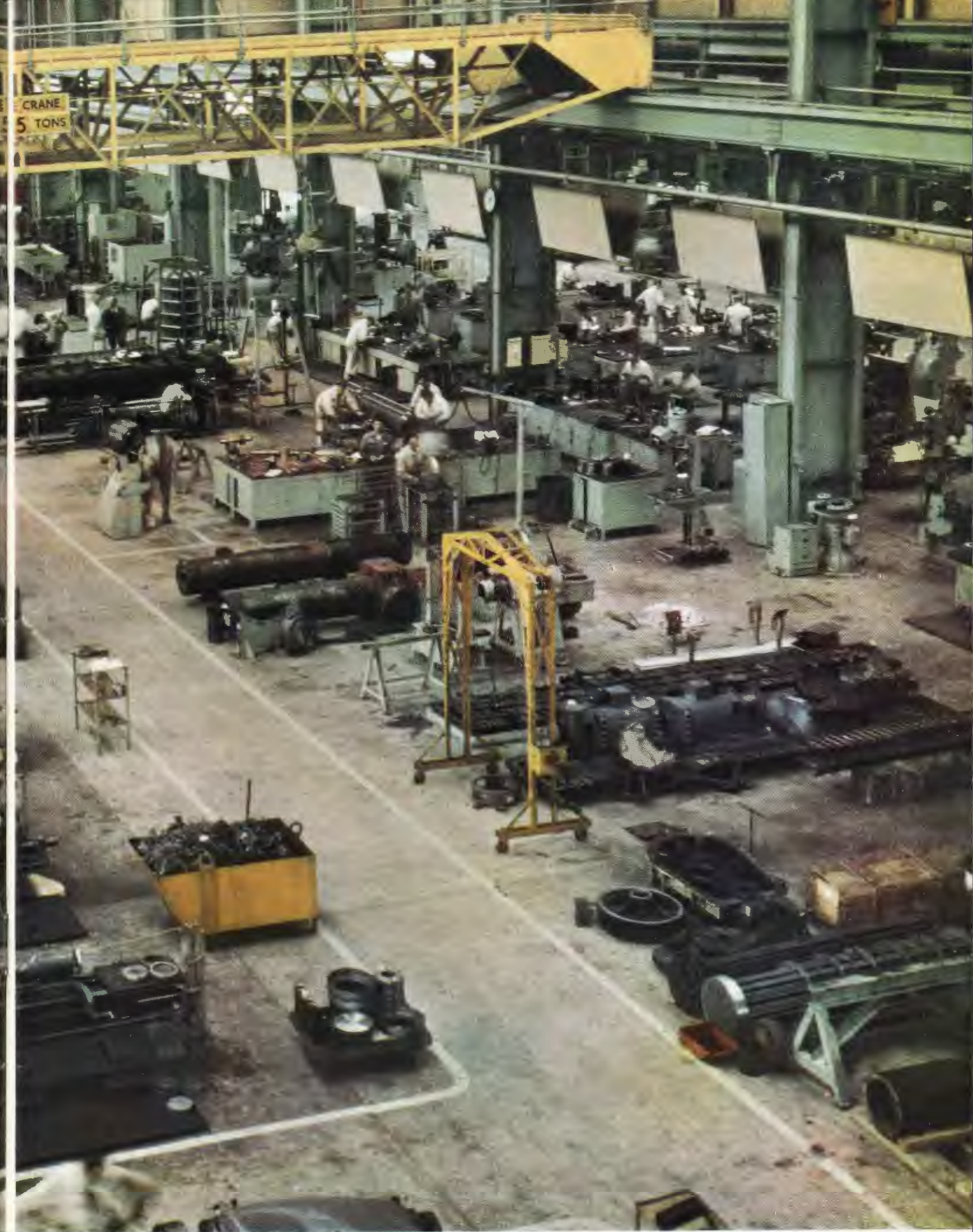
Just as development and expansion are the theme of the whole Wilton site, so also the Workshops have developed as required by the rest over the last twelve years. Each time the need for further expansion is most carefully examined to ensure that the maximum use is made of all facilities and that there are no cheaper ways of providing the workshop service which the new Wilton plants require.

From the first small beginnings with a few score workers, things have grown, so that now 600 men, including some sixty apprentices, are working in the main buildings. Some work non-stop shifts round the clock to cope with the incessant demands that are made on their skills from every corner of the site. There are fitters, joiners, machinists, plumbers, platers, sheet-metal workers, burners, welders, and of course our old friends the blacksmiths, all employed here: between them they can perform an almost infinite variety of operations.

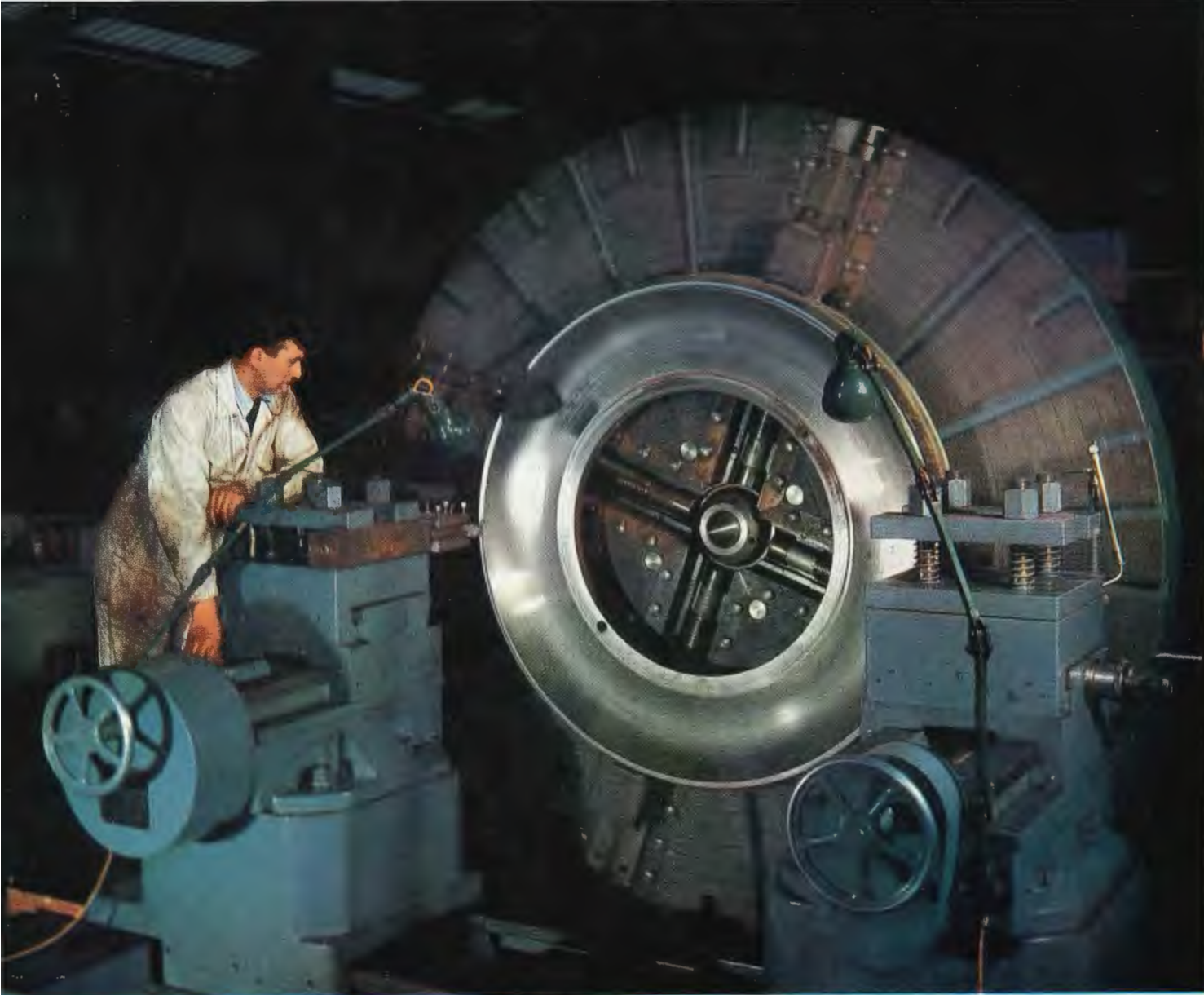
The Workshops occupy two buildings, which from the outside look purposeful rather than elegant. The total floor space of these buildings is 142,000 sq. ft., and of this 60,000 sq. ft. is the new Machine and Fitting Shop.

"This place is an engineer's paradise," said Mr. Cyril Archer, the Engineering Works Manager, as we entered the new building.





The large machine bay of the new Machine and Fitting Shop. The accent is on good layout.



ABOVE: The final touch is given to a ball race
from the bottom of a coal crushing mill

RIGHT: A welder at work repairing a bottom
of a tank (Photo: Douglas Glass)

FAR RIGHT: Blacksmiths at work in the Fabri-
cating Shop using a 10 cwt. hammer





The triple oxy-acetylene cutter, which can slice through steel up to 6 in. thick

Over 150 machines were in operation in the shop, grouped in bays, ranging from the smallest at one end of the shop to the largest at the other. It was all neat and well ordered, with ample space, good lighting, and the minimum of fumes or dirt apart from the small piles of metal shavings at the sides of the machines. The impression of good order was emphasised by the pale green and grey colours in which the machines and the walls are painted. The electric power installations ensured that there were no overhead belts and pulleys—a major contribution towards making the workshop quieter and more pleasant to work in.

"All the men here are on work study incentive bonus schemes," explained Mr. Archer. "We handle about 600 jobs a week. Some of them—perhaps the most urgent—may only take an hour or two, but

others take much longer to complete. Each job is first examined by a planner and then by an estimator, who places a time on it. The allowed time for the work is then put on a job card, and the target of the tradesmen is to improve on this time and so earn a bonus. So everybody here is geared up to get through the work as quickly as considerations of quality and safety permit. This is a factor of the utmost importance in maintenance and repair, since delays can cost money—sometimes very large money indeed."

As we wandered through the shop I inspected some of these jobs. I watched a part which was being turned and polished on the lathe to a high degree of accuracy: minute slivers of metal were peeling off and the lathe was being lubricated with a milky stream of coolant.



High-temperature heat treatment in progress. A batch is here being withdrawn from the ovens.

Looking around, it was obvious that the work was of a high standard. Some jobs, I was told, are being finished to specifications as fine as a half a thousandth of an inch. The workshop was a veritable torture chamber for metal. On every side metal parts were being bored, scraped, planed, gouged, peeled, punched and rubbed from every angle, in every shape, and with every degree of violence from stroking to sledge-hammer blows.

The results of all this work were bewilderingly varied. I saw for instance a tiny needle valve spindle about half the size of a Biro refill. At the other end of the scale there was a 20-ton reaction vessel which had come in for refitting and which looked solid enough to knock a hole in the bottom of a battleship.

The impressive thing about these workshops is the combination of complexity and precision under

one roof. Considering the weird shapes and sizes of the components that come in for repair and the enormous variety of the specifications which are sent in for attention, it is no mean achievement that the right thing is done at the right time and the goods are delivered according to orders. Perhaps the best testimony to the good design and the efficient running of these workshops was the Safety Award flag flying over the building in which nearly two million accident-free man hours have been worked in recent times.

These workshops are not unique, there are others in the Company like them. They are, however, the newest of their kind, and it is obvious that there is a quiet sense of pride. These modern-style smiths are literally responsible for ensuring that a £100m. works does not come apart at the seams.

NEWS IN PICTURES — Home and Overseas



Ablaze with light. Following last month's pictures of the opening of I.C.I. House, Melbourne, this striking photograph illustrates the spectacular wall of light made on the night scene by the building's 5500 electric lights



The Prime Minister at Billingham

(1) Mr. Macmillan is seen above in the Billingham machine shops with Mr. W. J. V. Ward (Division Chairman) and Mr. T. C. Robinson (Engineering Works Manager). He visited Billingham during his recent "meet-the-people" tour of the north-east. (2) Mr. Macmillan chats with a group of Billingham Division girls outside the staff canteen, (3) shaking hands with Mr. J. W. Thompson (Works Councillor and A.E.U. convenor) on the site. Also in the picture (left to right) are Dr. S. W. Saunders (Heavy Organic Chemicals Division Chairman), Mr. A. B. Goggs and Mr. E. A. J. Bravin



Heading the queue. Following the recent campaign for volunteers, Paints Division's Sister Duncumb sets the example by being inoculated against poliomyelitis. 350 Slough employees volunteered



Long Service. During a recent visit to Bombay Dr. J. Craik (Nobel Division Chairman) presented long service awards to employees of I.C.I. (India) Private Ltd. He is seen here presenting Mrs. Padmabai Salva with a watch for 15 years' service



Mr. S. Redding (Metals Division), a toolsetter at Witton, had completed over 50 years' service when he retired recently. His connection with the Company dates back even further than the fifty years, as he was born in the lodge at the gates of Eley Bros., Edmonton, one of the constituent companies of Nobel Industries Ltd.



Mr. H. C. Davenport (Metals Division) retired at the end of last year after 54 years' service with Amal Ltd. and its predecessors. He was engaged on the development side of carburation and can claim to have seen nearly every type of motor cycle carburetter that has ever been made



Six miles of 'Terylene.' One of the 50 rolls of 1400 mm. wide rubber-coated 'Terylene' conveyor belting destined for Russia is seen here before curing at the factory of B.T.R. Industries Ltd., who specially designed it. It is part of an order for nearly six miles of conveyor belting to be used in an iron ore field



Mr. G. Woolley (Witton Strip Mill of Metals Division) retired recently, after more than 51 years as a caster—a fine record for continuous service in such strenuous work



Mr. Daniel Evans (Lime Division) has retired after completing 51½ years' service with the Company and its predecessors. At the time of his retirement he was the primary crushing plant attendant at Tunstead Quarry



First-aiders. At the Modderfontein factory of A.E. & C.I. Ltd. African employees gave demonstrations during the St. John Ambulance presentation of first aid awards. Our picture shows (left to right) Simon Lakwame, Samuel Sithole, Zacharia Sihola and Adam Khasake demonstrating treatment for two fractured thighs



And so to bed. This small girl's pyjamas by Bairnswear are made in a new fabric—67% 'Terylene' / 33% wool. They are piped with pink, embroidered with a flower motif and will drip-dry. They will retail at approximately 29s. 6d. for size 22 in.



Three Duperial staff were included in the Argentine XI which met the M.C.C. team during its recent tour. They were R. P. R. Ker (who captained the side), A. H. Paine and R. Bryans. Above: R. P. R. Ker with Hubert Daggart (right,) the M.C.C. captain, gleefully watching the coin land right for him for the fourth consecutive game

Longest serving employee of Billingham Division, Mr. W. Kelly retired at the end of January after 55 years' service with the Company. He is seen here being congratulated by the Division Chairman, Mr. W. J. V. Ward, at his retirement presentation



The only woman apprentice. Sixteen-year-old Miss Vivienne Ridley, who hopes to qualify as a draughtswoman, is the only woman in the Apprentice School at Kynoch Works, Metals Division. On a recent tour of the Works the Lord Mayor of Birmingham stopped at her lathe for a chat



Climbing the wall. Recent icy weather conditions did not damp the enthusiasm of the Wilton Works apprentice XI. When football was impossible alternative recreation facilities were quickly arranged for them in the gymnasium, and the juniors spent the time training hard with basketball, indoor football and physical exercises



Mr. W. Parkinson, a cooper in Dyestuffs Division's Blackley Works, completed 50 years' service with the Company. He has spent the whole period in the Coopers' workshop, and he has been in charge there since 1957



Prizewinners. This laundry basket, moulded entirely in 'Alkathene' by Jury Holloware Ltd., was awarded second prize in the first annual I.C.I. 'Alkathene' design competition. Ecko Plastics Ltd. and Poplar Playthings Ltd. took first and third prizes respectively for a toilet seat assembly and toy field gun



TV personality in I.C.I. film. Chris Chataway, one of the 'in' as an observer (right, nearest camera) during a Works Council at Central Staff Department as part of a recruitment campaign at interviews of technical staff at Bi



first under-4-minute milers and now well known on television, "sat Bilingham Division. The scene was from a film being made by universities for graduate staff. Mr. Chataway has made filmed llingham and elsewhere in I.C.I.

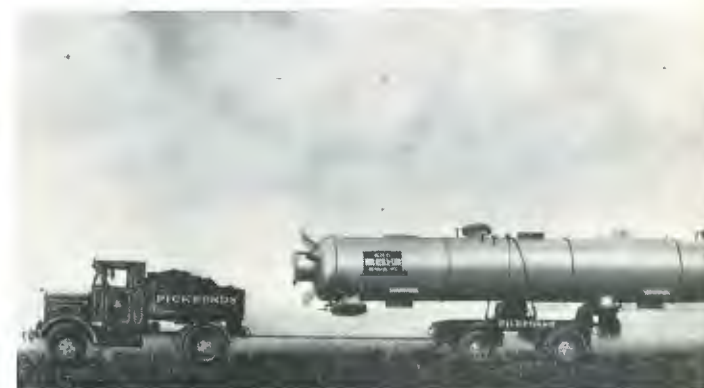


Furniture exhibition. At the I.C.I. (Hyde) Ltd. stand at Earls Court the three rooms displaying 'Vynide', 'Vynair' and 'Vynalast,' the new facing and panelling material, attracted a great deal of comment and enquiries



Dancing partners. Mr. Laurence Norton (General Chemicals Division apprentice fitter) and Miss Sheila Billington appeared on television recently representing the north-west against the south in an old-time dancing competition. They hold the amateur title for British All-England and Isle of Man dancing competitions

Spotting the faults. Under a new method at Wilton Works trainee instrument artificers are instructed on chemical plant simulators how to find faults which might develop under plant operating conditions



Twelfth man. Destined for General Chemicals Division's Cassel Works, this 96 ft. steel column is one of twelve to be erected at the new Acrylonitrile Plant. Acrylonitrile is used mainly for the manufacture of acrylic fibres for synthetic rubber



Order of St. John of Jerusalem. Dr. J. Watson Ridley (a part time medical officer, Wilton Works) was installed as a Serving Brother of the Order of St. John



Safety slogan. "I could kill myself laughing at you, Bert!" was the slogan which won Miss Margaret Deakin (Wilton Works) a £2 prize awarded by Ro.S.P.A. in a recent national industrial safety campaign. Our picture shows her receiving the cheque

TOM GEMMELL

By Denzil Batchelor

MY exemplar is Calvin Coolidge. One day, a third of a century back, he came home from church and faced his family. "Calvin—the new preacher! What was he like?"

Dead silence.

"What did he preach about?"

Calvin put his umbrella back in the stand. He straightened his tie.

"Sin," he said.

"No! You don't say so? *Sin*. How absolutely fascinating! Think of it—after Luther, after Savonarola, after Newman. What did he say about it?"

Calvin Coolidge faced the fluttering femininity of his family. He said:

"He was agin it."

Tom Gemmell is of the school of Coolidge—he is modest and uses few words. He is twenty-seven, a lightweight by boxing standards, five feet seven and a half inches tall, ten stone seven in winter and summer. He's dark haired, a teetotaler, a smoker of five cigarettes a day, with a rare smile, beautiful teeth, and a lean lithe body that seems too lightly strung for a champion footballer. It isn't, however—as an inside forward Tom's a maker of goals rather than a flash-point snap-shooter. He's played for Scotland a couple of times, against Portugal (victory) and Yugoslavia (draw). He scored against Portugal, the game he considers his most memorable.

"I'm slow," he says, in the tones of a humble man, proudly admitting a defect. Under pressure he admits: "I'm not so bad at ball control."

Tom's father is a miner, his elder brother played in junior football. Nobody banged the drum when he was just picked (out of the Irvine Meadow Club) for St. Mirren. His father said "Good luck." His mother nodded: so did his elder brother. Later, when he was twenty-four, he played in a B international, a goal-less draw against France at Toulouse. The family went through the same routine.

Somebody probably said "bad luck" when a poor game for the Scottish League against the English League kept Tom out of last year's Scottish World Cup team. If anyone did, Tom shook his dark head. If you played a bad game that was your fault and you took the consequences.

Anyway, at twenty he was an inside forward for St. Mirren, the Paisley Club that always draws a 10,000 home gate and never seems to finish very high in the League or to do anything dramatic in the Cup. In Tom's time they've once reached the League Cup Final, losing to Aberdeen. "Better side won," he says.

You will find him similarly reticent on most subjects connected with football. Does he remember any overwhelmingly exciting game of football?

He does not.

What was the funniest experience he ever met on the football field?

He can't say: he can't remember one.

About the drawn game against Yugoslavia he is—if good manners can allow for such an attitude—somewhat sniffy. He thought Belgrade a beautiful but poverty-stricken (and bicycle-denuded) city. The football pitch was miserable; and the team "only ordinary." I love that phrase. It doesn't mean, as it might, equal to any other—it means quite inferior.

Gradually I got a clearer picture of his home and finely unemotional family, of his summer golf (handicap 9) at Ballochmyle; of the evenings spent reading Agatha Christie and Nevil Shute. The £12 a week he makes as a player in winter is vitally important to Tom. For the rest, he hates watching football. He has no nerves at all as a player but he is horribly excited when he has to be a spectator.

You can tell in two minutes that he loves the game. If he wasn't paid to play, he would be training (as usual) two nights a week and turning out on Saturdays in the white and black stripes of St. Mirren before a 10,000 crowd for nothing. If he were a wee bit less gifted he'd be happy no doubt to turn out for the Ardeer Recreation team, the junior club that plays in the Western League—with the supreme advantage for the amateur player that if he gets picked by a big club the whole of the two or three hundred pounds transfer fee goes to him, the club taking nothing.

But Tom Gemmell isn't in that class. He has reached the top. He is able to sit back—looking so slight as to be almost skinny—and reflect on the players he admires: among Englishmen: Haynes, Finney, Matthews and Wright (unprompted, he names Finney first); among Scotsmen: Alec Parker, the Everton back; Bobby Evans, the Celtic centre-half; and Tommy Younger, that mighty goalkeeper. And he names the teams he admires too—the classic Hungarian side top of all.

He thinks things over, and considers that Scottish football isn't at its peak or on its down-grade: it has only just got started. Money's the trouble. True, there is no ceiling



Gemmell (right) in action against the Rangers

wages in the game—but is there a player (except perhaps with Rangers) who'll be earning as much as an English star who doesn't think he's getting an adequate wage at £20 a week and £4 bonus for a win? *The trouble is that there are too many part-time players in the Scottish game:* too few who get the discipline of a full-time football career as their profession. In a word, Scottish football can't afford the best players. How then can it hope to reach the throne of championship?

As we spoke Tom Gemmell reminded me of the anonymous hero of "The Story." You know it, of course? Well, forgive me if I tell it again.

It seems there was once a famous St. Mirren player who died and presented himself at the gates of heaven. "But my dear fellow," said the angel on the gate, "how wonderful to see you! Come right in—you've a clean sheet, you know."

The St. Mirren player hung his head. "I'm afraid I haven't. Do you remember that cup tie against Celtic? They gave me a goal—but in my heart of hearts I always knew I was offside. We won by that goal, and I've worried about it ever since. My conscience has *never* been clear."

The angel on the gate beamed. "My good chap—what absolute rot! As it happens, I was watching that game. You weren't offside at all. It was a perfectly good goal."

The player heaved a sigh of relief. "Thank heaven!" he sighed. "I can't tell you what a relief that is, St. Peter. I feel a new man."

"You're a new angel. Come right in! And by the way, why do you call me St. Peter? I am St. Mirren."

The Vintage Car

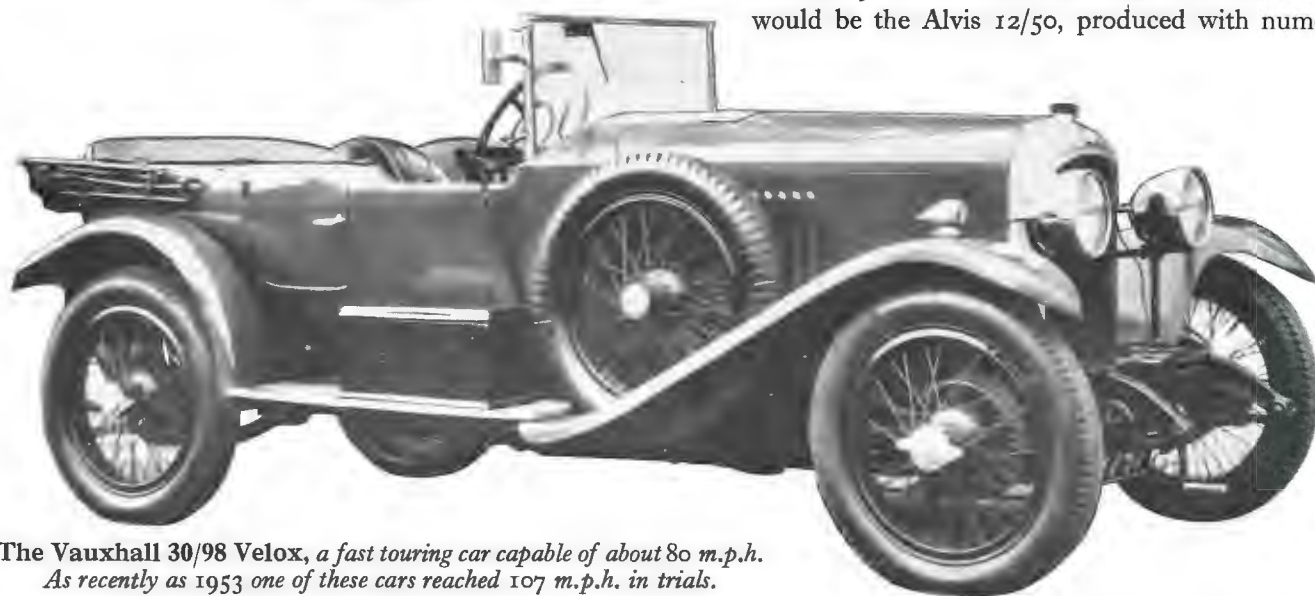
By Alan J. Halfpenny (Wilton Works)



The Alvis 12/50, an economical and very reliable 1½ litre car



The Austin Seven, generally known as the "Baby Austin," a car which had a tremendous following in the '20s and still has a name for reliability. This particular model was built in 1922 and is the forerunner of a series extending over 17 years.



The Vauxhall 30/98 Velox, a fast touring car capable of about 80 m.p.h. As recently as 1953 one of these cars reached 107 m.p.h. in trials.

There is a lot to be said for the vintage car if you are short of the "ready," able to do some of the maintenance and repairs yourself and look for individuality in your motoring. Moreover, negligible depreciation can often more than offset higher running costs and repairs.

VINTAGE CARS—to most people these words conjure up a picture of an ancient sporting motor resplendent in gleaming brasswork and driven by a heavily moustached gentleman in a low-pulled check cap.

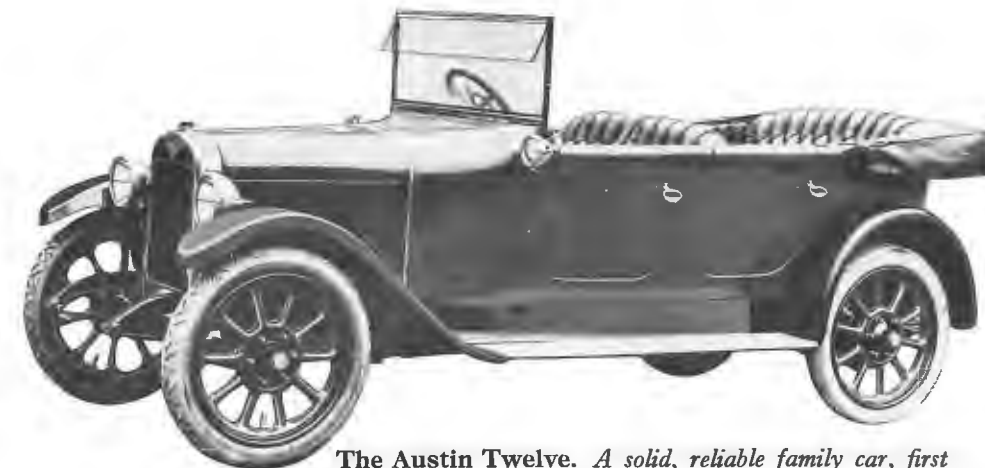
Nothing could be further from the truth. The vintage car is something quite different from *Genevieve* and her veteran contemporaries. Veteran cars are pre-1904. But the vintage car is one built between 1918 and 1930. This period saw a greater diversity in makes of car than anything before or since. They range from the fabulous Hispano-Suiza with its 9½ litre engine and the startling innovation of four-wheel brakes to the Baby Austin Seven.

If you are looking for something different in motoring, the vintage car is your answer. The idea that they are only for the rich is quite wrong: reliability and economy go hand in hand with many makes. Eminently suitable for the man of modest means would be the Alvis 12/50, produced with numerous

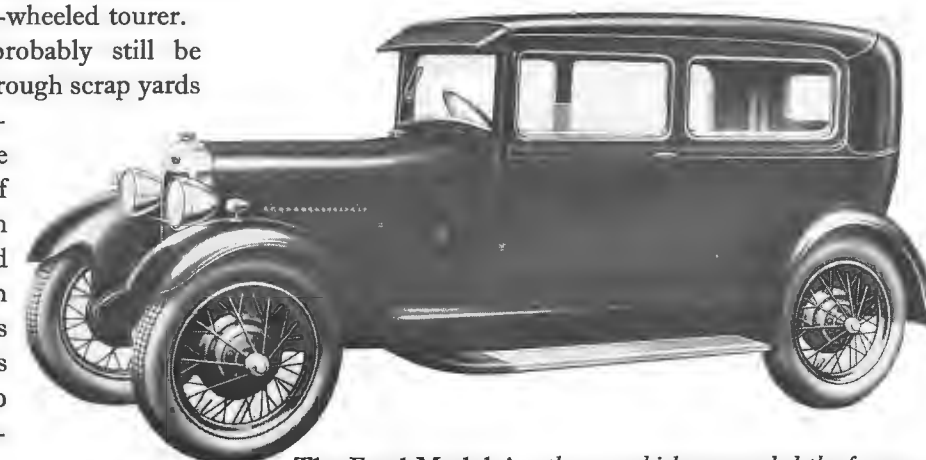
body styles from 1923 to the early 1930s. The coachwork varies from the most elegant polished aluminium two-seater to the very solid artillery-wheeled tourer.

A basically sound 12/50 can probably still be found for about £50, and a search through scrap yards will nearly always produce the essential spares. And if you have some technical knowledge, a fair degree of patience and a flair for exploring in unexpected places (such as behind farm buildings), sometimes a bargain can be got for as little as £5. It has even been known for cars with trees and shrubs growing through them to be restored and gain *Concours d'Elégance* awards.

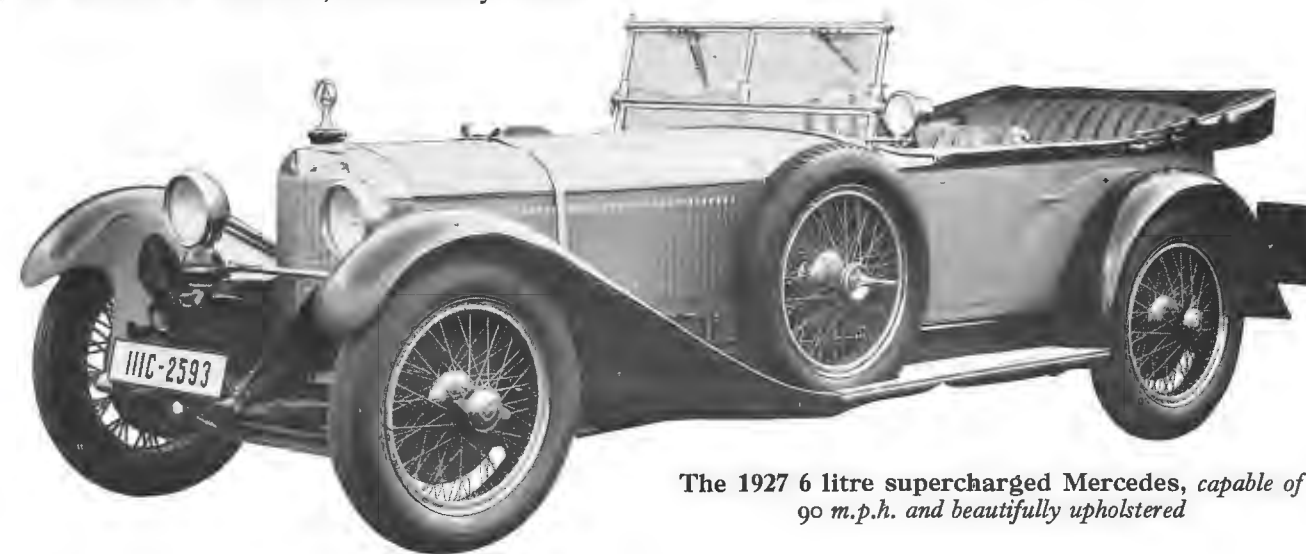
Do not imagine that the mention of *Concours d'Elégance* means that vintage cars are merely to polish and admire or that their speed and performance can be likened to the slow, inflammably erratic



The Austin Twelve. A solid, reliable family car, first produced in 1922 and widely sold.



The Ford Model A—the car which superseded the famous Model T in 1928



The 1927 6 litre supercharged Mercedes, capable of 90 m.p.h. and beautifully upholstered



Perhaps the most famous of all cars ever produced—the Ford Model T, affectionately known as the “Tin Lizzie,” a reliable economical car produced in large quantities from 1909 to 1927

progress of the horseless carriage as popular films would have it.

The 4½ litre Bentley of 1928 was capable of 90 m.p.h. and won the Le Mans race of that year at an average speed of 69.5 m.p.h. Later this car was developed into a hundred-mile-an-hour model by the addition of a supercharger, the only drawback being its uncontrollable thirst for petrol—still, it was cheap in those days! As the slump of the 1930s worsened, so the Bentley grew larger, until finally an 8 litre model was made. Few vintage cars enjoy such a revered position as the Bentley, and they still figure prominently in club racing today. Its size and weight

caused the Bentley to be described as “a very fast lorry” by Ettore Bugatti, the renowned Italian designer of the time.

In the same class of sports cars was the Mercedes, product of the German firm still famous for its high-grade cars. Mercedes were great exponents of the supercharger: this attachment made a tremendous noise, which induced the driver to believe that he was going a lot faster; but its actual value in miles per hour was debatable. There was keen rivalry between these cars and the Bentleys, the latter usually

winning. It is still not difficult to find a good Bentley for about £250, but a contemporary Mercedes is more rarely come by, due to its foreign origin and unsuitability for the winding British roads.

Another near rival of the Bentley, and still to be had fairly easily, was the Vauxhall 30/98 Velox, developed from a moderately powered touring car.

Of the vintage economy cars there is nothing to touch the “early perpendicular” Austin Seven. The first of these cars weighed only a little over 6 cwt., seating four in relative comfort. Its reliability and “guts” are proverbial: not every car can climb Table Mountain. The decidedly sketchy nature of the brakes

and steering made a speedy journey somewhat of an adventure, but as the maximum was about 48 m.p.h. happenings of an alarming nature were rare.

Not only was the Austin popular in this country but it was sold in large numbers abroad, where it was manufactured under licence. In America it was called the Bantam, in France the Rosengart and in Germany the B.M.W. This will explain the surprising number of very English sevens seen by visitors to the Continent.

For those affluent enough to ignore economy and disparage pure speed there were a few very exotic cars designed to provide opulent dignity. Even the names of these have an expensive sound—the Isotta-Fraschini, the Hispano-Suiza, Daimler, Rolls-Royce and Napier. The bodies were usually made to measure to suit personal idiosyncrasies. The carriages were truly magnificent. If he so wished, the owner could stand up without risking his topper or sink unseen into the most luxurious upholstery. The Bugatti Royale, with its 14 ft. wheelbase, touches

perhaps the acme of opulence. To sell this car proved difficult, and several of the 300 h.p. 12½ litre engines were later used to propel railcars.

Vintage cars have a definite personality, and in these days of mass production there is a certain joy in having something more individual. The owner must be prepared to spend time and patience on his motor, as it is not getting any younger; but then its depreciation will be negligible, and it will give him individual motoring as opposed to mere driving.



The foundation car of Morris Motors—the snub-nosed Morris. Here is the original 1913 model fitted with a French Hotchkiss engine. Later snub-nosed versions were very popular in the '20s.



The 1928 4½ litre Bentley, complete with characteristic strap round the bonnet. A high-performance sports car capable of 90 m.p.h.



Luxury for the millionaire in the '20s—the huge 7½ litre Isotta-Fraschini

SIDELIGHTS ON STAFF RECRUITMENT

By John S. Gough (Recruitment Section, Central Staff Department)

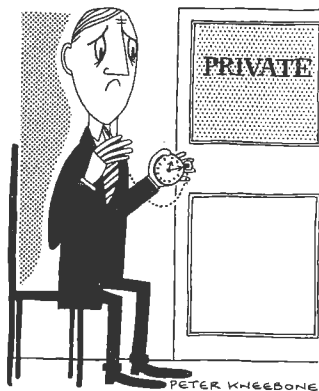
Recruitment of staff for I.C.I. is of course largely handled direct by the Divisions. They and the Regions receive a very large number of direct applications, do most of their own recruiting and make final decisions. But Recruitment Section of Head Office Staff Department sees the overall picture and itself deals with thousands of applications. Here is a glimpse behind the scenes on the receiving end.

A THOUSAND letters a month come to the Recruitment Section of Central Staff Department in Millbank, most of them from people wanting jobs. The requests take many forms, from the letter, oblique and touching, which begins "Dear Sir, I am 14 years old and want to be a scientist" to the straightforward and less attractive "Dear Sir, I have decided to join your firm. Please arrange for me to meet one of your Directors."

People of all ages write to us, from schoolboys to the man of 65 who is "still full of vigour and my friends say I look far younger than my age." Included in the total are those who want "some general advice about a career in industry—not necessarily in I.C.I." because in a high proportion of such cases this is the company they hope to join.

One of the interesting things about this rather formidable postbag—which is considerably augmented by telephone calls with the same end in view—is that it has so greatly increased over the last few years and so far shows no signs of diminishing. Indeed, applications of all kinds for 1958 show an increase of over 80% on those of 1955.

Letters from parents, schoolchildren and their teachers almost all have as their ultimate aim a job in I.C.I., though the first approach may be simply to ask what subjects it would be best to read at school. In this group of letters the same trend is noticeable—only here the increase is over 250% above 1955! Service officers affected by the cuts in the Services and overseas Civil Servants returning from Malaya, Nigeria and Ghana have also applied in large numbers—approximately 600 officers applied in the period January 1957 to June 1958. Most of them are older men, and we now encourage them



to register with their own Associations and we inform these Associations whenever we have any suitable vacancies.

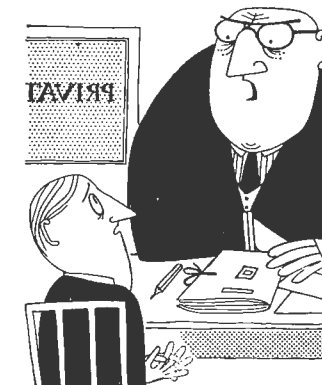
It would be unwise to attempt to give the reasons for these increases, for candidates for jobs look at employers from different and differing points of view and are affected by their estimate of conditions in the country as a whole. Many of the younger enquirers have only the vaguest idea of what industry is like and, only too often, of what they want to do. Recently an undergraduate told a member of the Section that his friends thought poorly of him for applying for a job in industry, "for," he said, "they believe that industry is staffed mainly by hard-faced men concerned only with making money"; another candidate said he was astonished to see how *human* we all were.

For one applicant security is a major concern; for another the prospects or the chances of rapid movement are attractive. Some appreciate the diversity of I.C.I. or admire its record of invention and development; to others one part of its activities holds a specialist appeal. For all of them, however, it is reasonable to suppose that the Company's reputation as a good employer and its interest in the individual are powerful factors. For this reason the figures are an encouragement—they are also, of course, to be welcomed as widening the field from which selection may be made.

The qualifications offered range from the man with "general administrative experience" via such hybrids as a linguist with a legal degree to a highly specialised ecologist who wants to be considered only for a job in London. A glance at an analysis of applications shows that the numbers applying under the broad heading "commercial and administrative" come at the top of the list. Looking at some of the figures classified in greater detail it appears, for instance, that during the first six months of 1958 147 agriculturists and 15 architects applied for jobs, and a further 43 wanted to work on the personnel side and 71 in publicity.

The letters vary enormously in the amount of information they give. Some people send pages of closely written

information and seem to neglect no trifling detail of their past lives—though the man who gave the name of every master who had taught him every subject in every form must be regarded as exceptional! Quite a few send photographs. Some send examples of their work, and some collect the most illustrious references. Some letters are notable for what they omit, and here one can often guess successfully: no age mentioned generally means at least 45; no class of university degree generally means a third or pass. Some people write direct to the Chairman or one of the Main Board directors, feeling that in this way they will draw special attention to their application. In fact, however, every application receives the same degree of attention and everyone receives an individual answer.



This individual answer is by no means the standard practice everywhere, and only recently the editor of a well-known daily paper told us that it was a quite common practice for employers only to return applicants' replies to advertised jobs with "No" scrawled across them in pencil! From other sources we know that far too large a number of employers do not even acknowledge letters from applicants in whom they are not interested.

The sorting of these letters, the decision whether to send out an application form for fuller details; whether to reject immediately, whether to send the papers straight to a Division or whether to interview first in London naturally depends not only on how the qualifications and particulars are interpreted but on the number and kind of vacancies available. Here the closest day-to-day contact is maintained between the Divisions, Regions and Head Office departments. All of them regularly notify vacancies to the Recruitment Section.

These vacancies fall into main groups. First come the "standing orders"—for scientists and engineers, of which there is a shortage, for Arts graduates to be taken on through the Arts Graduates Selection Panel system. Then come other types of jobs for staff of Technical Officer status or above. Finally there are the more junior staff jobs which are notified to London because there is a local shortage, e.g. laboratory assistants and draughtsmen. Apart from the first group, which contains the 300-400 scientists and engineers and 60-80 Arts graduates which the Company has regularly recruited annually over the past few years, the list of outstanding vacancies notified may number from 80 to 100 at any one time. At the time

this article is being written there are 97 of these vacancies, and they include a bibliographer, a fuel technologist, a surveyor, and a packages and products handling adviser.

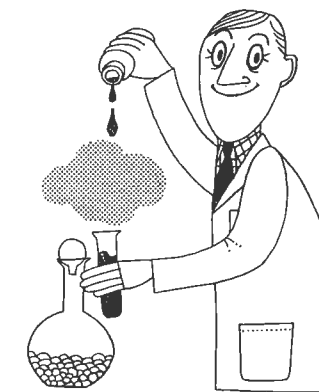
Full details of all these jobs are continually coming into the Recruitment Section office on forms specially devised for the purpose. They are supplemented by telephone calls and personal discussions, because to make the fullest use of the applications it is necessary in advance to know something of the forward demands in addition to the notified vacancies.

Taking all the types of jobs which we classify, the overall figure shows that less than 2% of all these random applications result in appointment to the staff, and so to a very large number of our correspondents we have to give a disappointing reply. Indeed, one of the first arts which must be acquired in this kind of work is the ability to write "no" in a variety of ways. In doing so one has to remember that to many people outside I.C.I. it seems almost inconceivable that there is not "a small corner in your huge Company where you can fit me in," as they quite often express it. Consequently we try as far as possible to explain shortly why we are not able to find a suitable post and endeavour to make helpful suggestions as and when we can. Whatever form of words is chosen, it is of the greatest importance to leave no lingering hope in the mind of the applicant unless there is full justification for it.

After this first paper process is completed and "turn-down" letters have been sent out, some of those who remain will be invited for an interview by the Recruitment Section. The majority of the interviews are to see if the first promise of the application form is borne out in person.

There are naturally many surprises when the interviewer and the person who filled in the form meet for the first

time. The candidate for some weeks, perhaps, has been saying to himself and to his wife that he hasn't a hope of getting the job, that he does not really care if he gets it or not. Unless he is a hardened campaigner, however, as he sets out for the interview the pulse of hope beats beneath the clean shirt put on specially for the occasion,



and the tie done with particular care and the unaccustomed shine of the shoes both reveal the importance he attaches to the mission on which he has embarked. He may arrive deliberately too early for the interview and then walk uncomfortably, rather breathlessly, up and down the street until it nears the time for interview. Then

(Continued on page 104)

SELLING 'TERYLENE' KNOW-HOW

By E. D. Kamm (Commercial Director, Fibres Division)

The licensing of 'Terylene' manufacture abroad brings I.C.I. a substantial revenue. But there are many problems to be overcome before know-how can be transferred, and some of the complications and difficulties are here revealed for the first time.

I.C.I. has concluded an arrangement with Teikoku Rayon Co. and Toyo Rayon Co. under which these companies will acquire patent rights for the manufacture of 'Terylene' in Japan. The arrangement will involve a substantial fixed payment and a continuing royalty on sales. The Company has already licensed companies in France, Germany, Holland and Italy to manufacture 'Terylene.'

This simple, straightforward news item appeared in the *Magazine* in April 1957. Leading up to it had been many months—indeed years—of hard and anxious work, mainly (but not entirely) within Fibres Division. And there was a period of still more work to come. I have been asked by the Editor to describe briefly what was involved.

It happens from time to time, but not too frequently, that a company like I.C.I. has the patent rights and know-how relating to an invention of major importance which it uses itself wherever it can but which for a variety of reasons it cannot itself exploit over the whole world.

Patents are, of course, effective only in the particular country in which they have been granted, and the law in most countries requires that patents must be "worked" by the owner within a limited time after grant, usually three years; otherwise the patent is open to compulsory licensing, or it may even become void. "Working" involves actually using the invention for manufacturing purposes; but there is some degree of flexibility, and imports of products of the invention or arrangements for licensing the invention are of some help. In practice, however, after the period of grace it is extremely difficult to refuse to grant patent licences if pressed to do so.

'Terylene' polyester fibre was discovered in the laboratories of the Calico Printers' Association Ltd., and the basic patents are still their property. Under an agreement, concluded early in 1947, I.C.I. became the exclusive licensee of the Calico Printers' Association throughout the world (except for the United States) with responsibility for developing and exploiting their discovery. I.C.I. spent several years in working out, in laboratory and pilot plants, how best to make the new product in various forms and in

appraising its commercial possibilities. During the course of this work many inventions were made; these were made the subject of patent applications, from which I.C.I. acquired many hundreds of patents in the more important countries.

Many of the key patents in continental Europe were due for "working" in the very early 1950s, and, as will be obvious, at that time I.C.I. was in no position to find the finance, the staff and other facilities to build plants and to set up sales organisations in a number of countries. However, the importance of the discovery was becoming widely known, and there were already requests for licences from companies all over the world. The problem of licensing had to be considered seriously, and one of the first questions was to decide which of the many candidates should be preferred.

Clearly the acceptable candidates must be of substantial standing—politically and financially—in their own countries. Expenditure on the minimum economic unit for synthetic fibre production is very great indeed, and manufacturers must have adequate resources both to finance and to staff the project. Moreover, there were arguments in favour of having one licensee, or at most two, in any one country if political factors permitted. Then, in order that maximum benefit should accrue as quickly as possible to the Calico Printers' Association, I.C.I. and licensee, we felt it desirable that the latter should already have experience of both polymer chemistry and man-made fibre production.

Having chosen a number of potential licensees, detailed negotiations started. In the early stages we had to discuss, in fairly general terms, matters of principle: for example, what patents in which countries were to be licensed; what rights, if any, the licensees were to receive to export their products or articles made from their products to countries in which I.C.I. had already granted licences to other companies; what was to be paid in the form of running royalties and fixed payments; whether the licences were to be exclusive or non-exclusive; whether there were any patents owned by other companies which might prevent

the licensees from operating the processes I.C.I. wished to license; whether the Calico Printers' Association and I.C.I. patents were effective for preventing the manufacture or sale of 'Terylene' polyester fibre by unlicensed companies; whether the licensees should acquire detailed technical information from I.C.I. in addition to patent rights; whether the licensees should have the right to use the trade name 'Terylene'; and so on.

Questions such as these had to be answered at a time when I.C.I.'s own full-scale plant was not finally designed, before many of the patents were granted and, of course, without disclosing secret technical details that had been worked out by I.C.I.

Having resolved problems of this kind in a general way for the European licensees, we prepared short "heads of agreement," which were to be initialled by the negotiators and which would then be considered as providing a sufficient safeguard to enable confidential manufacturing information to be transferred without waiting for the completion of formal legal agreements. The negotiations which led to these "heads of agreement" proceeded as fast as could be expected, bearing in mind their complicated nature and the need to discuss each difficulty with several companies. As many as twelve or more drafts were sometimes required before documents could be produced and signed and the transfer of know-how could begin.

Since we were negotiating with five European licensees, this was in itself a formidable operation. The drafting and executing of formal legal agreements took another two years, which were spent in discussing and agreeing a mass of intricate detail and in reconciling the requirements of differing legal and taxation systems and in securing the approval of the licensees' government authorities.

The transfer of technical information was itself a massive undertaking. Thousands of engineering drawings and flowsheets and hundreds of reports, operating manuals, etc., had to be assembled, edited and despatched. We received at our pilot plants at Huddersfield and Hillhouse, and later at the full-scale plant at Wilton, for periods of up to a month or so, many scores of chemists, engineers and technicians, sometimes accompanied by competent



Instruction in 'Terylene.' The president and senior officials of Teikoku Rayon Co. having 'Terylene' explained to them at Fibres Division. Dr. Caress, chairman of Fibres Division, is on the extreme right.

interpreters and sometimes not, all seeking the countless details of our equipment and processes.

Negotiations for the grant of licences in Japan came later than those for Europe. Again there were a number of possible candidates, but these were gradually narrowed down to the two companies, Teikoku Rayon Co. Ltd. and Toyo Rayon Co. Ltd., that finally took licences. With the experience of the European licensing we were able to omit the "heads of agreement" stage, but even so the negotiations took about four years. In some ways the problem was simpler, because by the time serious negotiations began our plant at Wilton was fully operational; but language difficulties and the distance between the U.K. and Japan were always delaying factors. Also, the negotiations required to secure the approval of the Japanese Government authorities proved to be extremely complicated and troublesome.

However, eventually, early in 1957, the agreements were signed and the transfer of know-how could begin. As before, this was a major undertaking: the weight of paper sent to Japan amounted to about 1½ tons, and it included some 20,000 drawings. The cost of air freight alone approached £3000. For the remainder of 1957 our works at Wilton and laboratories at Harrogate were scarcely ever free from a group of five or six inquisitive Japanese chemists or engineers. All this was at a time of full production, when other demands on our technical resources were considerable.

Although the Japanese licensees got away to a late start, they set about the construction of plant so expeditiously that already they are producing their brand of polyester fibre, "Tetoron," at a rate comparable to that of some of our European licensees.

THE MASS SPECTROMETER

By J. H. Beynon (Dyestuffs Division)

Here is yet another ultra-ingenious analysis tool—expensive but extremely useful. This one works on the principle that if you pass an electric current through a gas or vapour, the molecules break up into fragments with a characteristic pattern—a pattern which can be recorded automatically. The mass spectrometer is thus a sort of highly sophisticated molecular fingerprinting machine which can be used to identify very small impurities.

Illustration by H. J. Eric Smith

WHEN an electric current is made to flow through a gas or vapour, the gas molecules become charged and broken up in a variety of ways. Early in this century J. J. Thomson, an English scientist, invented an instrument whereby he could sort out according to their weights the various charged fragments. This instrument was the first mass spectrometer.

Thomson showed that if these charged particles were allowed to fall on a photographic plate they caused blackening. This meant that by placing a photographic plate in the paths of the separated particles it was possible to obtain a photographic record or spectrum of the fragments formed, and the position in which the various fragments, often as small as individual atoms, arrived at the plate enabled their weights to be calculated.

Since his apparatus provided a method by which mixtures of gases could be studied and analysed, Thomson was given many gas samples to examine. Among these was one consisting of a concentrate of the rare gases of the atmosphere in which it was hoped to discover some hitherto unknown atmospheric constituents. Thomson easily detected such atoms as helium of relative weight 4, neon of weight 20 and argon of weight 40. In addition he found atoms of weight 22. These corresponded to a new form of neon gas, indistinguishable chemically from the more abundant neon of mass 20 but having an atomic nucleus of different weight. These two forms of neon are called isotopes.

Thomson's discovery of neon of weight 22 was made in 1913; in 1919 F. W. Aston, working at Cambridge with a much improved instrument, began an investigation of all the elements for the presence of isotopes, tabulating the abundances of all the isotopes he found and measuring their weights very accurately. A. J. Dempster in America also made measurements on several elements, but Aston with his prolific output of accurate results made the subject virtually his own. In the space of a decade Aston discovered and measured most of the stable isotopes known today; and it seemed to him that the measurements which he had undertaken would soon be completed and that the subject of mass spectroscopy would die with him.

However, that was not to be, and it was not long before a new phase of usefulness began. This was the use of the

mass spectroscopy as a sort of "molecular fingerprint" machine, identifying quite complicated chemical compounds by the characteristic pattern of their fragments under the action of electric current.

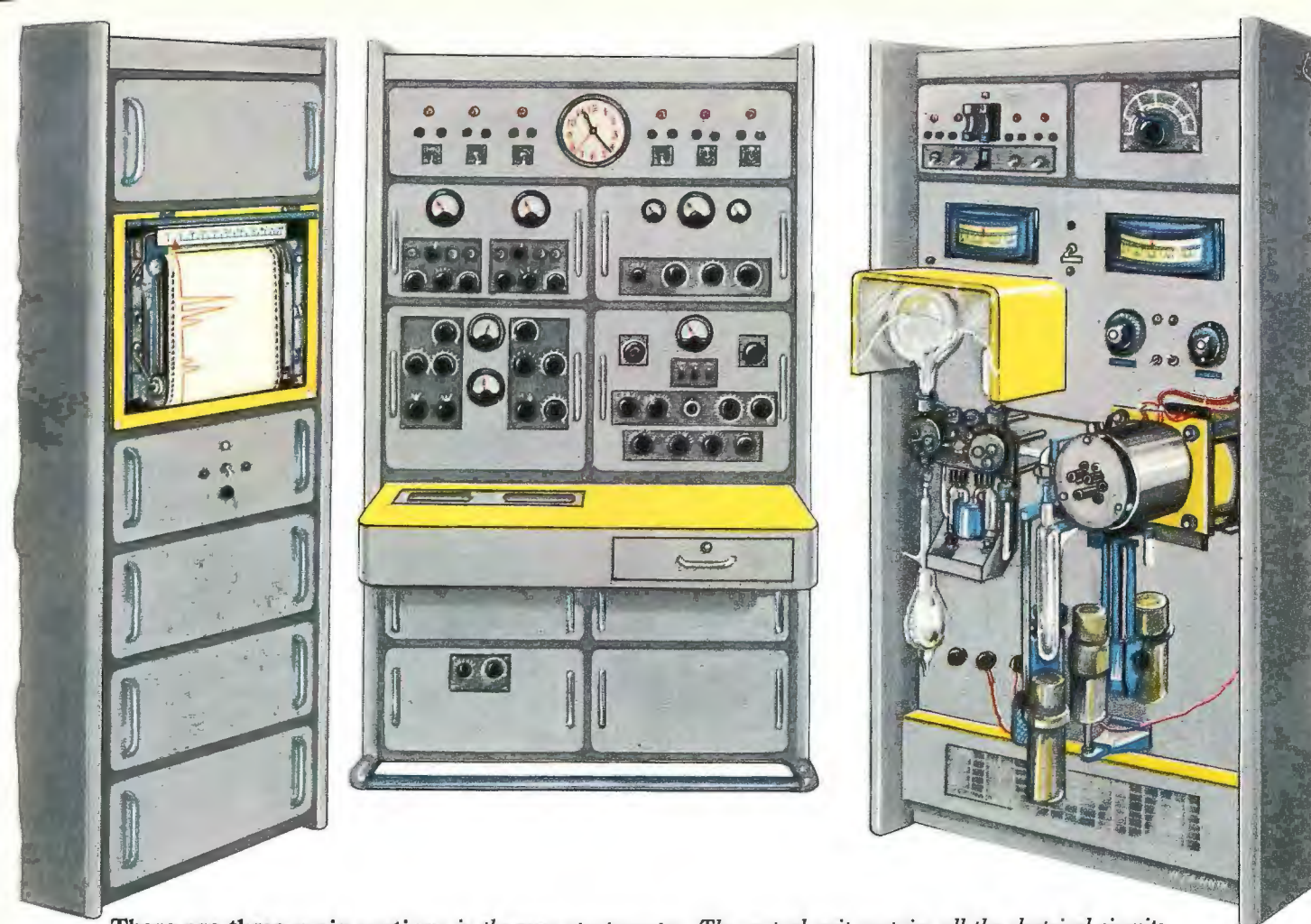
Another and different kind of analogy can be made between the fragments of the molecule and the letters of an anagram in a crossword puzzle. By fitting the fragments together scientists thought it might be possible to build up the complete structure of a previously unidentified chemical. Although many chemists were aware of the potentialities of the instrument they were slow to take advantage of the technique, mainly perhaps because the mass spectrometer was still an experimental and temperamental piece of equipment—a thing of string and sealing wax in the physics departments of the universities.

The spur to the development of the mass spectrometer into the reliable commercially available instrument of today was provided by the petroleum industry, which has to deal daily with the analysis of large numbers of complicated mixtures of substances. The proper control of processes such as the cracking of crude oil into petroleum depends on the results of the analyses of these mixtures, so that a rapid method of analysis is vitally necessary. But speed cannot be achieved at the expense of accuracy when an error of 1% in a measurement may be the equivalent of several hundred tons of material.

The first commercial mass spectrometer was built during the last war to satisfy this demand for an instrument which could analyse the mixtures. Its success was immediate and spectacular. Soon, analyses which had previously taken weeks to perform were being completed in a matter of hours. Several computers were necessary to deal with all the calculation involved in working out the results from the spectra automatically plotted as pen and ink records by a single instrument. It was found that the saving in raw material and the improvement in product quality which resulted from the application of the mass spectrometer to the analyses of petroleum fractions soon paid for an instrument costing a mere £10,000 or so!

Several hundred machines are now in use in petroleum laboratories throughout the world, and the reliability and scope of the machines has improved steadily.

The chemical industry is now making good use of the



There are three main sections in the mass spectrometer. The central unit contains all the electrical circuits for controlling the instrument. The right-hand unit contains the various systems for introducing samples, whether solid, liquid or gas. The left-hand unit contains the recording equipment. Once the operator has put in the sample and set the controls, the mass spectrum is recorded automatically by a pen on the moving paper chart.

mass spectrometer to solve analytical problems. The mass spectrometer has the advantage that not very much sample is required for an analysis. A weight of one ten-thousandth of an ounce is a generous amount of sample, most of which could be returned after the analysis had been performed, and analyses have been carried out in special cases on samples of less than one-millionth of an ounce.

Another special advantage of the mass spectrometer is that it can identify very small amounts of impurities—as low as one part in a million of the main compound.

Identification of these very small impurities can be most useful. In the manufacture of synthetic fibres, for example, the intermediates used must be of a very high standard. The testing of the quality of these intermediates and the identification of the impurities which they contain are of tremendous importance, since the presence of very small amounts of certain impurities will ruin the desired physical properties of the fibre.

Another field in which the mass spectrometer is coming to the fore is the identification of smells. Very small amounts of certain substances contained as impurities in organic compounds are sufficient to impart to them an

undesirable smell, and most products are likely to sell more readily if such smells can be removed. Identification of the compounds responsible is a necessary preliminary to their removal.

By contrast, small amounts of strongly smelling compounds may produce desirable effects, and the mass spectrometer is beginning to find applications in the perfumery industry. It is also being used to identify the flavour-forming materials in foodstuffs. Imitation of the natural flavour is the aim in many cases; over forty flavour-forming compounds have been identified in roast beef; and margarine is being improved steadily in flavour.

In an article of this length it is impossible to cover all the problems to which modern mass spectrometers are being applied. Such diverse applications as the tracing of "labelled" drugs in the body, determination of the temperature of the ocean in prehistoric times, and measuring the age of the earth have all been undertaken. The instrument has also been used to study the detailed mechanism by which chemical reactions take place and to measure the strengths of the forces by which the atoms in chemical compounds are held together.

People and events . . .

Two New I.C.I. Directors

As reported briefly in last month's *Magazine*, two new executive directors have been appointed to the I.C.I. Board. They are **Dr. J. S. Gourlay**, Paints Division chairman, and **Mr. G. K. Hampshire**, General Chemicals Division chairman. As we go to press no announcement has been made of their special responsibilities.

Success stories of the lab boy to company director variety are uncommon enough to be remarkable. Dr. Gourlay, who comes to Millbank after two years guiding the fortunes of Paints Division, started his Company career as a laboratory apprentice at Ardeer Factory at the age of 14. Through a part time science course then run by Nobel's Explosives Co. in association with the local education authorities and the Royal Technical College, Glasgow, he went on to gain an external B.Sc. degree from London University, and in 1930 he was elected an associate of the Royal Institute of Chemistry. Five years later he was awarded his Ph.D. from London University. Dr. Gourlay has been successively Paints Division Research Manager, Research Director, Plastics Division Joint Managing Director, and in 1957 Paints Division Chairman.



Dr. J. S. Gourlay

★ ★ ★

Mr. Hampshire, who is 58, was I.C.I.'s senior division chairman—he became chairman of General Chemicals Division in 1947. Like Dr. Gourlay, he is a chemist. He was educated at Leeds Grammar School and Magdalen College, Oxford, where he took a first-class honours degree. He rowed in college crews which were Head of the River in the Torpids, Eights, and winners of the Visitors' Cup at Henley. He joined Brunner-Mond in 1923, and within ten years was appointed sales manager of the I.C.I. General Chemicals Group and five years later was made a group director. Throughout the war years he was the Division Managing Director, and in 1947 he succeeded Mr. V. St. J. Killery as Division chairman.



Mr. G. K. Hampshire

Conveyor Belting for Russia

NEARLY six miles of rubber-coated 'Terylene' conveyor belting—some of the widest and thickest ever made—is now on its way to Russia, where it is to be installed in a large iron ore field. It was specially designed for the job by B.T.R. Industries Ltd., who won the contract against stiff world competition and completed the contract within three months.

Over a quarter of a million miles of 'Terylene' yarn went into the special heavy fabric, which was woven for B.T.R. by John Bright & Bros. Ltd. This is one of the largest single orders for yarn yet placed with Fibres Division. 'Terylene' was chosen because it was the only fibre having the combination of outstanding strength, whether wet or dry, flexibility, and resistance to impact stretching and rot necessary for the job. (Picture on page 84.)

Top Priority

IF ammonia is the lifeblood of Billingham, then the compressors for the synthesis plant are its heart, and so it was a severe blow for Billingham last August when two of them broke down within a few hours of each other. The recommissioning of one in under six months is a fine example of teamwork between Ammonia Works maintenance staff and Peter Brotherhood, the firm who made the compressors over thirty years ago.

The two giant compressors were so badly damaged in the breakdown that they have had to be almost completely rebuilt. As each machine weighs about 100 tons the task has been formidable. The patterns from which new moulds and castings could be obtained had long since been destroyed, but within 48 hours of the second failure pattern-makers at Peter Brotherhood had cut

short their holidays to start round-the-clock work making new ones. Altogether about 150 tons of new parts were supplied for the two machines, including new crankshafts, crankcases and bedplates.

The first compressor was back in service again by the middle of January, and this month should see the start-up of the second machine.

Spider Lore

"SPIDERS may be liked or disliked, but nowhere are they ignored." So, with what some people may think a masterly piece of understatement, **Mr. W. S. Bristowe** (head of Central Staff Department) begins his new book *The World of Spiders*, which has just been published in Collins' "New Naturalist" series.

Most of the book is devoted to the strictly scientific and deals with such



topics as the ancestry of the spider—the fossil of the earliest known spider in the world, 300 million years old, was found at Aberdeen—its life-cycle and habits, and the various main classes into which the 580 known varieties of spider are grouped. But Mr. Bristowe also finds room for a delightful chapter on the spider in mythology and superstition. Miss Muffet, who fled from the spider in the nursery rhyme, stands revealed by Mr. Bristowe as the daughter of a famous sixteenth century naturalist, Dr. Thomas Muffet, who used to dose her with spiders to cure her ailments; and he tells of an encounter with a burglar who had several small money spiders tattooed on his forehead to bring him luck.

Mr. Bristowe's interest in spiders goes right back to his childhood, when,

he recalls, his aunts and uncles were graded in his affections by their willingness to share his passion for spiders. His searches since then have led him to some surprising places, not the least of them being the gardens of Buckingham Palace and the Garden of Gethsemane, and he was once arrested in the Louvre in Paris for taking a small bottle of alcohol out of his pocket to collect a *meioneta rurestris* dangling from the brim of his hat.

Paint Handbook

A THREE shilling booklet, *Colourful Homes*, just produced by Paints Division, should prove a godsend to anyone in a quandary over redecorating plans this spring. It includes in its 32 pages over fifty reproductions in full colour of paint schemes for both indoors and out.

Paints Division have introduced four new colours for 1959. These are Columbine (a soft pink), Silver, Wedgwood Blue and Cherry. The first three are available both in 'Dulux' Eggshell and Flat Finishes and in 'Du-lite' Emulsion Paint. Altogether there are now thirteen colours common to all I.C.I. finishes. In a wallet inside the

PEOPLE

Mr. S. P. Chambers, one of I.C.I.'s deputy chairmen, has been elected one of the London School of Economics' first honorary Fellows. The list of 21 includes the names of Earl Attlee and Lord Beveridge.

Mr. John Lill, who scored 86 for South Australia in their match against the M.C.C. at Adelaide, is a chemical engineer with I.C.I. Alkali (Australia) Pty. at Osborne. He plays in district cricket for Sir Donald Bradman's Club.

Miss Kathleen Dolan (Nylon Works, Billingham) won a silver rose bowl in a recent Durham County public speaking contest. Miss Dolan and her partner, a fellow member of the Stockton Co-operative Youth Club, chose the Colour Bar as their subject.

A half-century with the dyestuffs industry in Britain and Canada was recently completed by **Mr. W. H. Hampshire**, dyestuffs supervisor of C.I.L.'s Chemicals Division. Mr. Hampshire joined Read, Holliday &

Sons (now part of Dyestuffs Division) in 1908. Recently he has been directing the introduction of I.C.I.'s 'Procion' dyestuffs to Canadian industry.

To be "father of the chapel" is a proud distinction in the world of printers. **Mr. V. Wild**, who held that position in The Kynoch Press for many years, has just retired after 35 years' service.

The British trade and industrial mission which leaves for Ghana in a few days' time includes **Mr. Reginald Hoare**, a director of Pharmaceuticals Division.

Mr. F. G. Tanner, Head of European Department since 1943, retired from the Company due to ill health at the end of January.

A shorthand typist in Billingham Medical Department, **Mrs. Brenda Holborn**, was picked as reserve for the England badminton team for the recent international against Scotland. She has been the Yorkshire women's singles champion for the past four years.

back cover of the booklet is a revised edition of the 'Dulux' Colour Comparator which offers a choice of no fewer than 135 colour schemes, and another entirely new booklet—the 'Dulux' and 'Du-lite' Painting Guide. This gives down-to-earth directions to help you choose the right kind of paint for the job and tells you how to prepare and prime the surfaces to be painted.

Colourful Homes is on sale at paint shops throughout the country.

Bravery Award Man Retires

ONE of the handful of men and women who hold the I.C.I. Bravery Award retired recently after over 38 years' service. He is **Mr. Steve Tipper**, one of Ardeer Factory's senior hillmen.

Mr. Tipper was one of four men who in 1941 fought a fire which broke out in the porch of a building containing 4000 lb. of dry guncotton. Thanks to the gallantry of the four men, the fire was prevented from spreading.



Mr. S. Tipper



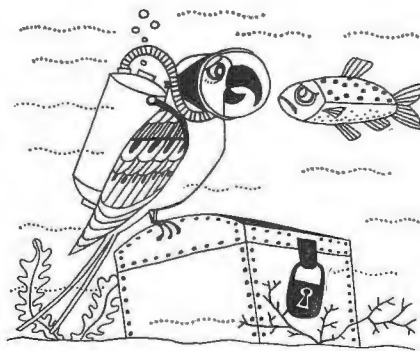
Gomia ceremony. Mr. R. C. Todhunter (I.C.I. Group E Director) took this photograph of the President of India, Dr. Rajendra Prasad (in white cap), planting a tree at the opening of the new explosives factory at Gomia built by Indian Explosives Ltd. With him are Mr. J. M. Lall (extreme left), chairman of I.C.I. (India), who own I.E.L. jointly with the India Government, and Mrs. Lall. Mr. Todhunter was a signatory of the original agreement with the Indian Government back in 1953.

Steve Tipper was the last of the four still at Ardeer. One was Mr. John Douglas, who was then safety officer. The others, now dead, were Mr. J. Grant and Mr. J. McGivern. Each was awarded the George Medal, which they received from the late King at Buckingham Palace, and the I.C.I. Medal for Bravery.

Pieces of Eight

WHEN Mr. John Lapham of A.E. & C.I. was fishing off Cape Point one Sunday morning he overheard one of his neighbours saying: "Tromp is going to have a shot at raising the treasure from the *Birkenhead*." He little realised at the time that he was soon to have a financial stake in the venture himself. The *Birkenhead*, a two-masted iron paddle steamer carrying troops for the Kaffir Wars, and their families, was wrecked in February 1852 one day out from Cape Town.

His interest awakened by what he had overheard, Mr. Lapham discovered after some research that the *Birkenhead* was reputed to have been carrying £300,000 in gold sovereigns—



pay for the troops in the Kaffir Wars—when it was wrecked. Later he met Tromp van Diggelen himself and learned of the recent discovery of the wreck by a young Dutch diver,

Nicholas Dekker. A result was that Mr. Lapham joined the syndicate formed to provide funds to raise the treasure.

He now describes himself as "one of that band of people who talk of treasure with a starry-eyed look." And this is hardly surprising, for if the gold is found each £1 share in the syndicate could be worth £100. Even if the gold is not found, the sale of copper and other relics will still provide a good return. But the story will not end there, for each investor will receive shares in a new salvage company which aims to raise a ship full of tin in Table Bay said to be worth a king's ransom.

Belgian Nuclear Plant Contract

WHAT is believed to be the first large nuclear energy order to be obtained by a British firm in Belgium was placed recently with I.C.I. (Belgium) acting as agents for Marston Excelsior Ltd. The order, worth just over £100,000, is for aluminium piping in connection with an experimental water-cooled reactor now in course of erection at the nuclear research centre at Mol in north Belgium, and it is the first such order to be placed with I.C.I. by a nuclear organisation outside the United Kingdom.

Tree-planting at Tunstead

IN the six years since Lime Division started its tree-planting programme more than 23,000 trees have been planted at Tunstead and other quarries in the Buxton district. The project was begun to improve the appearance of these sites which adjoin the Peak District park—the first national park to be established in Great Britain. In doing so the Division has planted far more extensively than was required by the special conditions of the planning permission granted to I.C.I. for large-scale quarrying operations at Tunstead Quarry. The Tunstead programme is now virtually complete, but planting is being extended to Hindlow, where over 11,000 trees are to be planted to screen present and future quarrying operations there, and to Raynes Quarry on the North Wales coast, for

which a shrub planting programme is planned.

The plantations in the Buxton area all lie at 1000 ft. or more above sea level on shallow limestone soil, in positions exposed to strong winds and very heavy rainfall. Under these conditions losses of up to about half the young sycamore, beech and conifers planted were expected. At Tunstead, however, contrary to all expectations, it has so far only been necessary to replace about one-fifth, most of which were conifers which seemed particularly reluctant to grow in the Buxton area. A further step has now been taken to reduce losses by establishing a nursery of over 5000 seedlings, both of well-tried and experimental types, at over 1000 ft. above sea level. To guard against the depredations of rabbits, hares and occasionally sheep, over five miles of rabbit- and cattle-proof fencing has been erected.

The tree-planting programme is under the supervision of Mr. B. P. Salt, the Division estates and survey section manager, and advice is taken from time to time from the chief forester of the Chatsworth Settlement Trustees. The field work is managed by Mr. C. H. Garlick. He is in charge of a four-man team, two on full-time forestry work, the others being called in during the busy periods.

Air Lift

TRAVELLING time for employees between Plastics Division's headquarters at Welwyn and its four manufacturing works in the north has in the past added up to some considerable number of man-hours. By chartering a four-engined de Havilland Heron aeroplane from Hatfield Aerodrome the Division is trying to cut this down.

Monday, 9th February, saw the first planeload of Plastics Division "commuters" between Welwyn and the North depart at 8.30 a.m. en route, in two hops, for Wilton Works and Billingham Division, Hillhouse and Darwen Works, arriving at its furthest destination at 11 a.m. The plane, which carries fourteen passengers, has been chartered as an experiment for ten working days, operating two round



Gift from Sweden. The ceramic urn which, as reported in our last Magazine, has been presented to I.C.I. by the Royal Swedish Academy of Engineering Sciences in recognition of the part the Company has played in the chemical industry. Designed by the Swedish artist Kage and made by the famous pottery firm of Farsta, it has panels inscribed with the Divisions of I.C.I. On the lid is the emblem of the Academy.

flights each day, ending at Hatfield at 7.20 p.m.

Quote of the Month

"EVERY human invention or discovery can be used for good or for evil, and it is therefore essential that the possible consequences of scientific re-

search should be put before the forum of ordinary people. Only in this way can the combined opinion of reasonable, upright and humane men and women throughout the world exert the necessary pressure to ensure that science is used to set free and not to enslave mankind."—*The Duke of Edinburgh, speaking at Delhi.*

NEWS IN BRIEF

Braden on British Industry. Bernard Braden and Barbara Kelly have made a series of four films, intended primarily for television in Canada, on life in Britain today. One concentrates on what is news in British industry, and for this Bernard Braden interviewed Dr. N. P. Inglis, Research Director of Metals Division, on the development of "new" metals for high-speed aircraft and nuclear engineering.

To pilot the Duke's Award. The Ardeer Factory company of the Army Cadet Force has been selected as the first cadet unit in Ayrshire to operate a pilot scheme for the Duke of Edinburgh's Award.

Nylon Yarn Plant No. 3. British Nylon Spinners, in which I.C.I. has a fifty-fifty interest with Courtaulds, is to set up its third nylon yarn factory at Brockworth near Gloucester. B.N.S. have bought the freehold of a Ministry of Supply factory at present tenanted by one of the Hawker-Siddeley aircraft companies who are ceasing production.

Travelling Fellowship. The I.C.I.-A.N.Z. Post-graduate Travelling Fellowship for 1959, worth £A1200, has been awarded to a 22-year-old Sydney University scientist, Mr. Richard Bramley. He plans to study inorganic chemistry under Professor R. S. Nyholm at London University.

Safety Trophy. In its first year of existence Heavy Organic Chemicals Division has won the I.C.I. Safety Trophy for the Division, making the biggest reduction in its lost time accident frequency rate. The Division achieved a reduction of 51.3%, and the rate fell to 0.473 from 0.972.

APPOINTMENTS

Some recent appointments in I.C.I. are: **Alkali Division:** Mr. E. H. Sale and Mr. G. W. Talbot, Division Directors (visiting). **British Visqueen Ltd.:** Mr. I. D. J. Holdron, Secretary and Chief Accountant. **Cookes Explosives Ltd.:** Mr. F. G. O'Hanlon, Director; Mr. R. G. Hawkins, Director; Dr. J. M. Holm, Chairman; Mr. A. J. Silvester, Director. **General Chemicals Division:** Mr. J. W. Gibb, Division Director (visiting); Mr. Harold Smith, Chairman. **Head Office:** Mr. J. Wilson, head of European Department; Dr. Christine Kirby, Assistant to Principal Medical Officer. **I.C.I.A.N.Z.:** Mr. A. W. Hamer, Operations Director, Mr. N. G. Wilson, non-executive Director. **I.C.I. (Brazil):** Mr. J. C. Fraser, General Manager (from 1st November). **I.C.I. (Peru):** Mr. E. D. Nock, President. **Metals Division:** Mr. S. P. Davies, Chief Accountant. **Paints Division:** Mr. E. J. Callard, Chairman. **The Regions:** Mr. G. O. Croft, Midland Region Pharmaceuticals Sales Manager. **Salt Division:** Mr. E. G. Cooke, Head of Research Department; Mr. J. H. Wolfe, Secretary.

OBITUARY

Mr. J. E. Braham

We announce with deep regret the death on 28th January of Mr. J. E. Braham, who retired as I.C.I. Engineering Controller last September.

Sir Ewart Smith writes:

John Braham had a host of friends throughout the Company, for he was a man whom to know was to like. We shall all feel that his death at the early age of 62 is a personal loss and that the world will be a poorer place without him.

I first met him in 1928, and between then and his retirement last September we worked together for 22 years. In the whole of that period I cannot recall a word or action on his part that was hard, unfair or unconstructive, however difficult conditions—or people—might be. For more than a year before retirement he suffered acute and increasing pain, but it was typical of the

Still Going Up

The readership of the *Magazine* is still steadily climbing. Last month 87,000 copies were printed at The Kynoch Press—2000 more than a year ago.

The figures for the last five Januaries are:

January 1955: 74,800
January 1956: 80,000
January 1957: 81,000
January 1958: 85,000
January 1959: 87,000

man that he carried on with his work with undaunted courage and never a complaint, to the admiration of us all.

He saw service in the first world war as a gunner at Gallipoli before taking an honours degree in engineering at Imperial College. After some outside experience he started at Billingham as a boiler specialist and rose through various appointments to be Chief Engineer in 1943. Three years later he was moved to Nobel Division as Chief Engineer and Director, and in 1950 came to Head Office as Engineering Controller.

Braham never sought the limelight, but he was an able engineer and a sound manager, who did much that was of value to the Company in each of his many posts. Above all he was one of those rare people whose first concern is to help others with no thought for themselves. His whole approach was founded on a deep and religious sense of values, and he set standards of character and devotion to duty that were, and will remain, an example to us all. We mourn the loss of a friend and at the same time salute the memory of a great and gallant gentleman.

Spare the Rod . . .

By James Thurlby

Illustrated by Robert Hunt

THERE was nothing faded or dusty about Miss Lucilla's or Miss Melody's gentility. It was, on the contrary, a bright and tangible feature of the atmosphere in the haberdashery shop which they ran in partnership. Miss Lucilla and Miss Melody believed that their wares included not only ribbons, lace and hanks of wool but also charm and courtesy—commodities which it was sometimes hard to find in other shops.

The sisters, both silver-haired and bright-eyed, were Edwardian in their outlook, and even—to a small degree—in their dress. Their Edwardianism was, of course, in no way to be confused with a more modern, flamboyant cult described by that term.

Indeed, they felt themselves to be a little remote from the affairs of modern youth until their nephew, Mortimer Tipton, a young man with a shifty glance and a revolting taste in ties, settled himself upon them as a non-paying guest. They were surprised to find that it was possible for one person to lack so many of the civilised virtues.

Miss Melody, who was not yet 60—and therefore not hard-headed enough about these matters—thought he was quaint. Miss Lucilla, who was 65 and more experienced, knew he was crafty.

Mortimer was not himself of the modern Edwardian persuasion. For one thing, he felt that at 23 he had graduated from his more youthful exuberances. And, secondly, he found that a too esoteric choice of dress tended to draw attention to his presence on those occasions when he would much rather his presence went unnoticed. He could not, however, bring himself to extend his modesty to his ties.

He explained that he was in the area looking for work, which was hard to obtain "in town." His efforts, however, seemed to be dogged by a significant lack of success. And when Miss Lucilla suggested that he might like to make himself useful about the shop by fetching in coal and wood, Mortimer received

the suggestion with evident horror and did nothing about it.

He seemed—for the first two weeks, at any rate—to have plenty of money. He smoked large numbers of cigarettes, letting them droop out of the corner of his mouth so that they wagged up and down when he talked.

Miss Lucilla did her best to take him in hand, for in spite of a certain sartorial elegance his finger-nails were like compost heaps and his manners were a constant essay in vulgarity.

He listened in a kind of truculent silence to his aunt's lectures. He could afford to let the old dear drool on. He had plenty of time. He had already located the cumbrous old safe in the office behind the shop. And he had already ascertained that the sisters always had a respectable pile of notes in there—£100, or perhaps more. One day he would contrive to see the combination, and then he would bid his beloved aunts a swift adieu.

So he paid heed to the homilies and for a while manifested an exaggerated courtesy which charmed Miss Melody but did not deceive Miss Lucilla.

To him they both seemed fussy and sugary and incredibly antiquated. Miss Lucilla, he found, could be a little sharp; but even for her the golden rule of life appeared to be contained in one word—gentility.

He was amused to find that Lucilla quoted this as an Edwardian precept of good behaviour. "In my young days . . ." she would start off; but the message was always the same, and he rarely took it in. On one occasion she was a little cross at his inattention and seemed about to mention other, possibly more positive, rules of Edwardian behaviour, but checked herself.

Gentle they were to a fault with customers, tradesmen and friends—even with him. It made him almost ashamed when he thought of taking their money. But perhaps it was a good thing. Perhaps, as he was one of the family, their gentility might deter them from reporting him to the police.

SIDELIGHTS ON STAFF RECRUITMENT (continued from page 95)

with resolute step and determined air, which go ill with a queasy stomach and shaking heart, he strides into the place where his fate is to be determined.

You can regard the interviewer himself in a number of different ways—the candidates of course do. Is he a Sherlock Holmes searching for clues? A buyer of precious and unstable raw material operating in a fluctuating market? A fortune-teller gazing into a crystal ball marked "Potential"? Perhaps he is a bit of each. Certainly he has been taught to struggle against all manner of personal prejudices and even against such old wives' tales as that red hair and temper go together, that a square jaw means a firm will, that the man who looks you straight in the eye has nothing to hide.

To help him in his task there is a bewildering amount of material available. Some put faith in handwriting; some in intelligence, interest, proficiency, aptitude or

personality tests. You can find advocates of techniques like the "stress interview," which is akin to Army Intelligence work, or certain types of group interviews which are related to the practice of public confessions in certain religious sects. There are advocates of the study of muscle control or the reading of bumps on the head. On two things only are virtually all the different schools agreed, and that is the importance of the man-to-man interview—and the folly of the man who claims to know a man's suitability for the job "the moment he walks into my room"!

There is, of course, no short cut to selecting people for a job. Nor, even if one could measure it accurately, can 100% success be achieved. Could we forecast the future in every detail and turn out individuals according to set formulae, selection would be easy but dull. That we cannot, makes it fascinating.

The little shop was something of a Mecca for the more elderly ladies of the area. For this was not a shop where, in the hasty modern manner, a customer came simply to make a purchase. Here you came to buy *and* talk. Miss Melody had found, in fact, that she could carry on as many as four conversations at once.

An air of leisurely charm prevailed. And Miss Lucilla had made special efforts to see that this was not diminished when she was persuaded to become the local agent for a firm of dyers and cleaners. This firm had installed a new type of steam clothes press for urgent orders at the far end of her main counter. She did not like the steam press; but the cleaners' commission was most attractive, and—well—she supposed she and Aunt Melody would have to retire one day.

Mortimer had been with them for almost a month before he discovered the combination for the safe. He gained his information by the simple expedient of listening at the open office door while Miss Melody laboriously repeated the numbers to herself as she twiddled the knob. He was glad the time for action had come, because he was almost out of cash and he hesitated to ask Miss Lucilla for a loan. Miss Lucilla had had a hard, rather ungentle light in her eye when she looked at him lately.

He was pleased with the way he engineered the theft. For a couple of mornings he rose at seven—half an hour before his aunts—and went for a long walk. He did not enjoy this, but he thought it an essential imposition if he was to avert suspicion. On the third morning he went straight to the safe, opened it, and extracted, to his delight, more than £120 in £5 and £1 notes.

Inside the safe also he was amused to find a bundle of letters, scented and faded, tied with a piece of pink ribbon. He picked them up and then threw them back in. His lips curled. What old maid's love affair lay buried in that pile?

And then, to prove his conscientiousness in these matters, he opened the till in the shop and took two notes and a few coins from there.

After that he went to the kitchen window, opened it, and made marks on the frame with a screwdriver to suggest that it had been forced. No harm in confusing the scent a little.

He patted the notes in his rear trouser pocket—his jacket easily covered them—and made for the back door.

Half-way across the kitchen he froze. Someone was coming down the stairs.

Mortimer reacted quickly. He leaped about, threw chairs around, staggered noisily into the dresser, shouted again and again "Stop, thief! Stop, thief!" and fell on the floor.

Miss Lucilla found him there and helped him to his feet. "Safe—robbed—thief!" he gasped.

Miss Lucilla nodded. She was agitated, but not throwing the kind of hysteria he might have expected.

She went to examine the safe. When she came back she asked, "He got away through the window, did he?"

Mortimer agreed eagerly. "Like a shot. Over the fence." He flung his arm out by way of confirmation. "I'd better go for the police."

But Miss Lucilla had taken his bloodstained right hand in hers and was moving him gently towards the sink. "Not until I've dressed this cut, my dear. It's bleeding badly. And it's so brave of you to fight against an armed bandit to try to save our few precious pounds."

Aunt Melody came in and fussed. Mortimer choked down his impatience. All he wanted now was fresh air. He wanted to get out. He couldn't afford to fool about like this. But he was caught in the meshes of the saccharine gentility of these two old dears.

Miss Lucilla said: "Melody, fetch some bandages, dear." Then she raised Mortimer's hand towards her face, peering at the gash caused by his too eager furniture destruction. She seemed to be breathing very deeply the while, apparently upset at the sight of the blood. Then she nodded slightly and thrust his hand beneath the hot tap until he squirmed.

Once the bandage was on he again offered to fetch the police. He realised he was perspiring now. There was something about Miss Lucilla that worried him. She was too calm. He didn't mind Aunt Melody. She was by now having the appropriate hysterics.

"Go the front way," said Miss Lucilla. In the shop she glanced briefly at the open till and then walked along behind the counter. Mortimer was at the door, unfastening a bolt.

Lucilla said, "Mortimer, I do believe your other hand is hurt. Let me have a look."

He knew he should not have gone back. He should have slipped the other bolt and left at speed. But if he could fool them that he was going for the police he might have half an hour's grace before the alarm was given.



Mortimer shouted "Stop, thief!" and fell on the floor

He went back to the counter. Miss Lucilla was leaning partly across the open clothes press.

"It's not hurt. It's fine," he said, trying to keep the agitation out of his voice.

"Let me see, dear. Give me your hands," she commanded.

He laid his hands, palms downwards, on the bottom half of the press.

Miss Lucilla acted with the swiftness of a striking tiger. She slammed the top of the press down on his wrists and, with two deft flicks, fastened the wing nuts to hold the press in position. Mortimer was bellowing with pain before he realised he was trapped.

His vision blurred for a second and then cleared, and in that instant he knew what it was that had made him afraid of Miss Lucilla. She looked like a schoolmistress. She was talking like one, too. "Your wrists aren't broken," she said shortly. "There is a good deal of padding on that thing. Stop howling."

Miss Lucilla walked round into the body of the shop. Mortimer was bending forward and could only move his head. When he tried to move his body a new flow of pain shot through his wrists. He remained still, and a strange fear crept upon him.

Miss Lucilla selected a three-foot length of brass curtain rod from a tray and took up a position slightly to the left and to the rear of Mortimer.

He knew then, with shattering and ignominious certainty, what was going to happen. He had never felt so exposed or so humiliated since his schooldays. He began to wriggle violently. His trousers felt as if they were

stretched to their limit.

"Melody," said Miss Lucilla, "have the goodness to raise Mortimer's jacket. I don't quite know where he has our money, but I am sure that in a moment he will tell us."

Miss Melody, looking apprehensive but interested, did as she was directed, and the money—mountainous in Mortimer's rear pocket—was all at once revealed. "Remove it," said Miss Lucilla. "It's in the way *just there*." Miss Melody complied.

The first blow felt to Mortimer like the application of a red-hot poultice. There followed a second, a third, a fourth. . . . After half a minute Miss Lucilla stopped. She was very pink in the face.

"I'm going to let you go in a moment, Mortimer," she said, panting slightly. "Don't come back—ever—or I'll set the police on you." Mortimer's only reply was a short whimper of supplication.

"But before you go," Miss Lucilla went on, "you should know two things. The first is that lavender, such as my sister occasionally sprinkles on her old love letters"—Miss Melody blushed—"has a lovely fragrance which lingers. It was still on your hands when I bandaged the cut. Secondly, I had meant to tell you that when I was a girl we had another very good Edwardian rule for behaviour besides that of gentility."

She administered one more resounding thwack with the rod which made Mortimer shriek, and then she went round to the back of the counter and leaned over towards him.

"The second rule," she said sweetly, "was illustrated by the saying 'Spare the rod and spoil the child.' Possibly your parents had never heard of that one, Mortimer. I hope I have remedied their omission this morning."

Abruptly her voice became that of the schoolmistress again. "Melody," she called, "open the door, please."

She released his hands, and Mortimer staggered painfully out of the shop towards his battle-scarred freedom.



"Judo"

Photo by A. G. Rogers (Paints Division)